

CLAIMS

What is claimed is:

1. A method for processing an acoustic signal to separate the acoustic signal into a voiced (V) component corresponding to an electrolaryngeal source and an
5 unvoiced (U) component corresponding to a turbulence source, the method comprising the steps of:
digitizing the acoustic signal to produce an original stream of numerical values;
extracting a segment of consecutive values from the original stream of
10 numerical values to produce a first group of values covering two or more periods of the electrolaryngeal source;
performing a discrete Fourier transform on the first group of values to produce a discrete Fourier transform result;
extracting a second group of values from components of the discrete
15 Fourier transform result which correspond to an electrolaryngeal fixed repetition rate, F_0 , and harmonics thereof;
inverse-Fourier transforming the second group of values, to produce a representation of a segment of the V component;
concatenating multiple V component segments to form a V component
20 sample stream; and
determining the U component by subtracting the V component sample stream from the original stream of numerical values.
2. A method as in Claim 1 comprising the additional steps of:
determining segments of the input acoustic signal that correspond to
25 inter-word segments.

3. A method as in Claim 2 wherein the step of determining inter-word segments includes a step of determining total power in the segments and characterizing such segments with relatively low power as inter-word segments.
4. A method as in Claim 2 additionally comprising the steps of:
 - 5 filtering the V component sample stream;
for segments determined to be inter-word segments, setting the corresponding values of the V component sample stream to a zero value;
adding the U component values to the altered V component sample stream values; and
 - 10 producing a process acoustic sample stream from the addition of the U values and altered V values.
5. A method as in Claim 1 wherein the steps are performed in a digital signal processor connected in line with a telephone apparatus.
6. A method for processing an acoustic signal to separate the acoustic signal into inter-word and non-inter-word segments, the method comprising the steps of:
 - 15 digitizing the acoustic signal to produce an original stream of numerical values;
extracting a segment of consecutive values from the original stream of numerical values to produce a group of values;
 - 20 determining an average power level for the group of values; and
if the average power level of the group of values is below a threshold value, determining that the group of values corresponds to an inter-word segment of the acoustic signal.

7. A method as in claim 6 additionally comprising the step of:

if the average power level of the group of values is above a threshold value, determining that the group of values corresponds to a non-inter-word segment of the acoustic signal.

- 5 8. A method as in claim 6 additionally comprising the step of:

setting the group of values to a zero value if they correspond to an inter-word segment.

10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100